

# Planning the IH-45 Zero Emissions Vehicle Corridor

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**2022 Transportation Short Course**

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# Relevance to Regional Planning

## Air Quality Emphasis Areas:

- High-Emitting Vehicles/Equipment
- Idling
- Hard Accelerations
- Low Speeds
- Cold Starts
- Vehicle Miles of Travel
- Energy and Fuel Use

## Performance Measure:

### Mobility 2045 Policies:

AQ3-003: Support and implement educational, operational, technological, and other innovative strategies that improve air quality in North Central Texas, including participation in collaborative efforts...

AQ3-004: Support and implement strategies that promote energy conservation, address public health concerns, reduce demand for energy needs, reduce petroleum consumption, and/or decrease greenhouse gas emissions.

[Mobility 2045 Chapter 4 – Environmental Considerations](#)

[Appendix C – Environmental Considerations](#)



# IH 45 Corridor Zero Emission Vehicle Plan Grant Background

**\$80,000 FHWA Award May 2020**

Alternative Fuel Corridor Program

## Key Deliverables



Stakeholder List & Meetings

August 2020 to June 2022



Corridor Workshop



ZEV Ride & Drives and Display

ZEV Workshop Held April 26, 2022



Infrastructure Deployment Plan with Stakeholder Letters of Support

Published August 31, 2022





# Plan Goals

## Provide Actionable Recommendations to Facilitate ZEV Deployments:

Battery Electric

Hydrogen Fuel Cell Electric

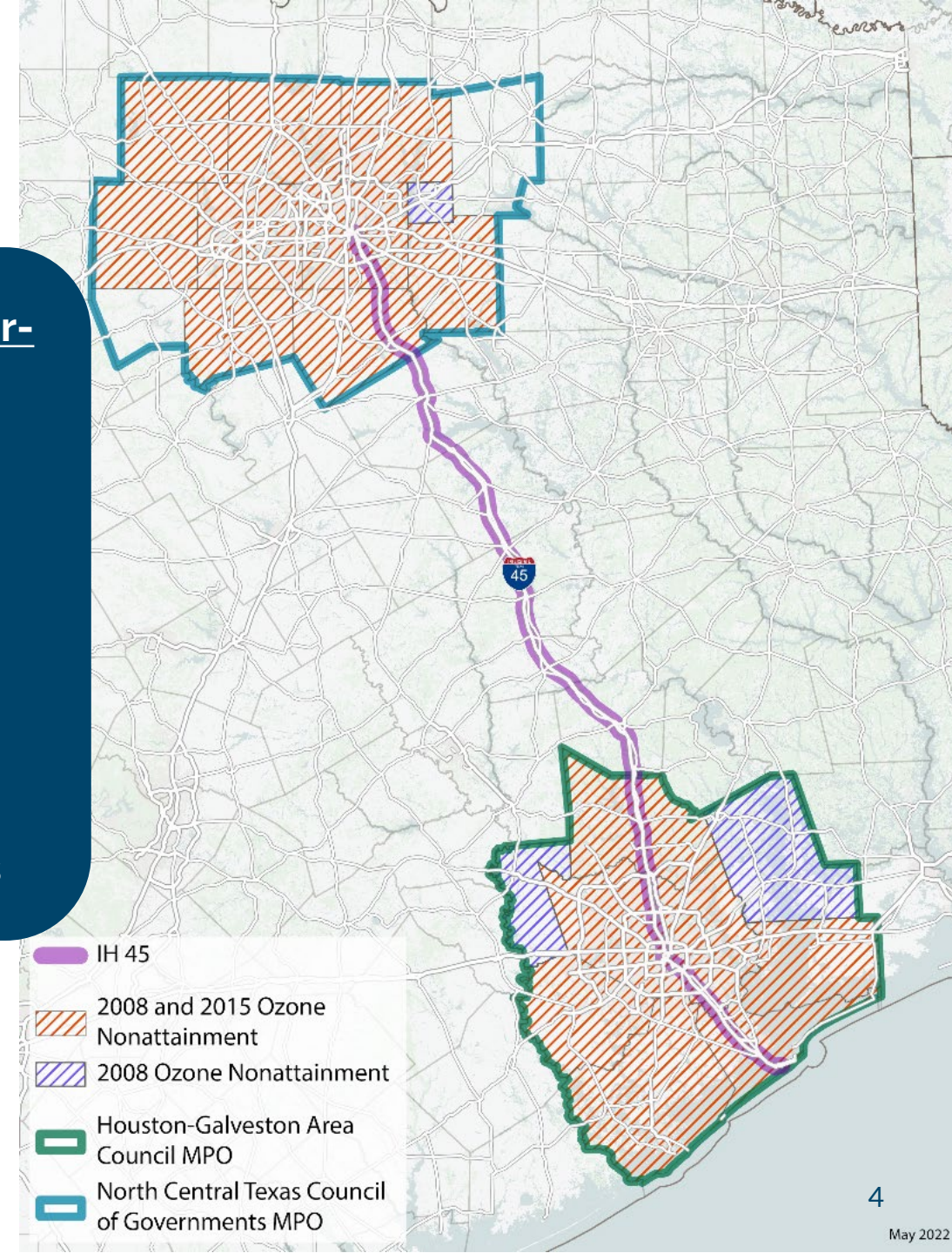
## Support Future Strategic Initiatives (e.g., Autonomous Vehicles)

## Engage Wide Range of Stakeholders

### To Achieve Corridor-Ready Status

1 Qualifying EV Charger Every 50 Miles

1 Hydrogen Fueling Site Every 150 Miles





# Light-Duty Battery EV Charging

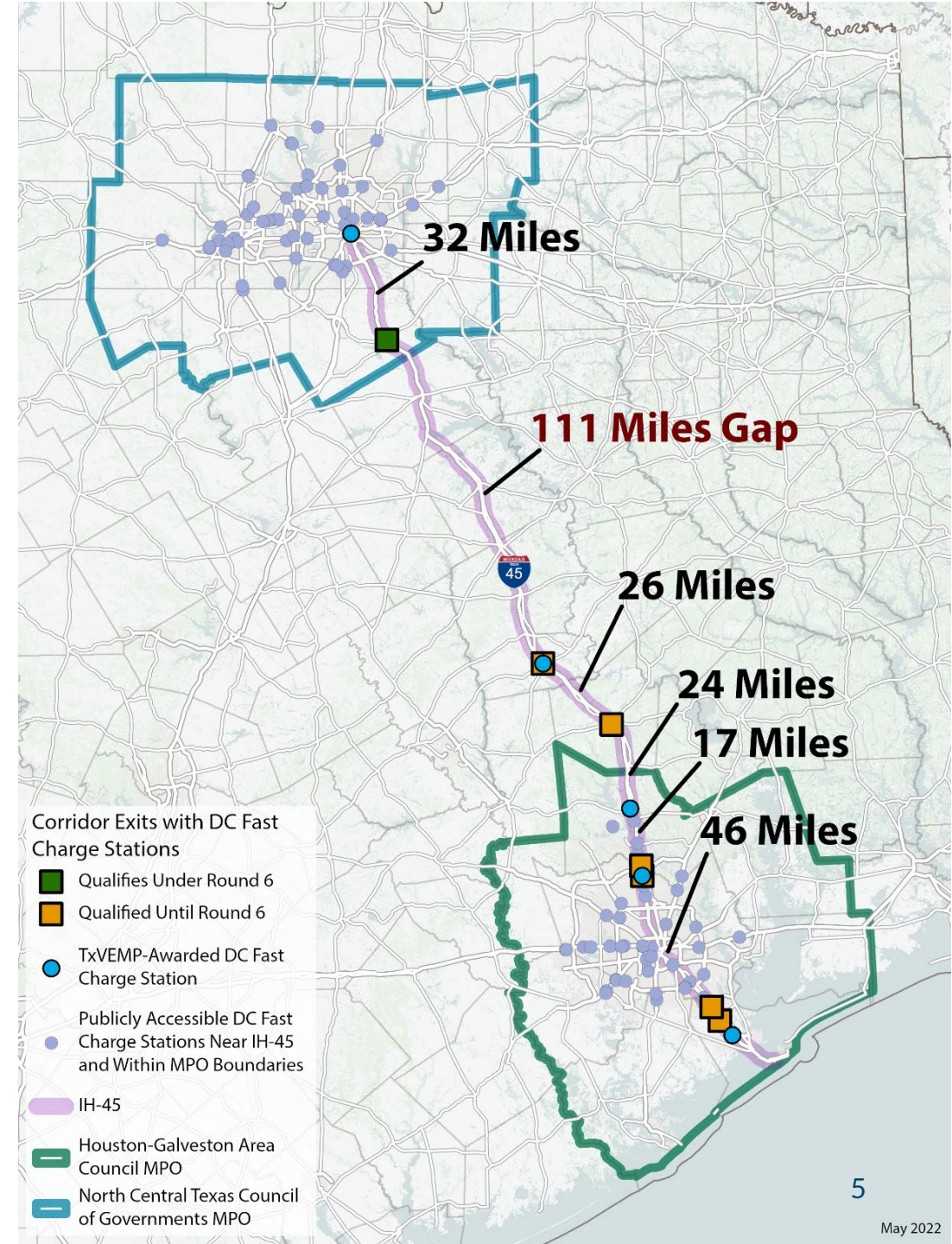
## Current Status

111 Mile Gap from Ennis to Madisonville

## As of February 2022, Qualifying Stations Must:

- Be Within 1 Mile of the Corridor Exit
- Provide at Least 4 CCS Connectors Capable of Providing at Least 150 kW Charging Simultaneously

CCS = Combined Charging System





# Light-Duty Battery EV Charging

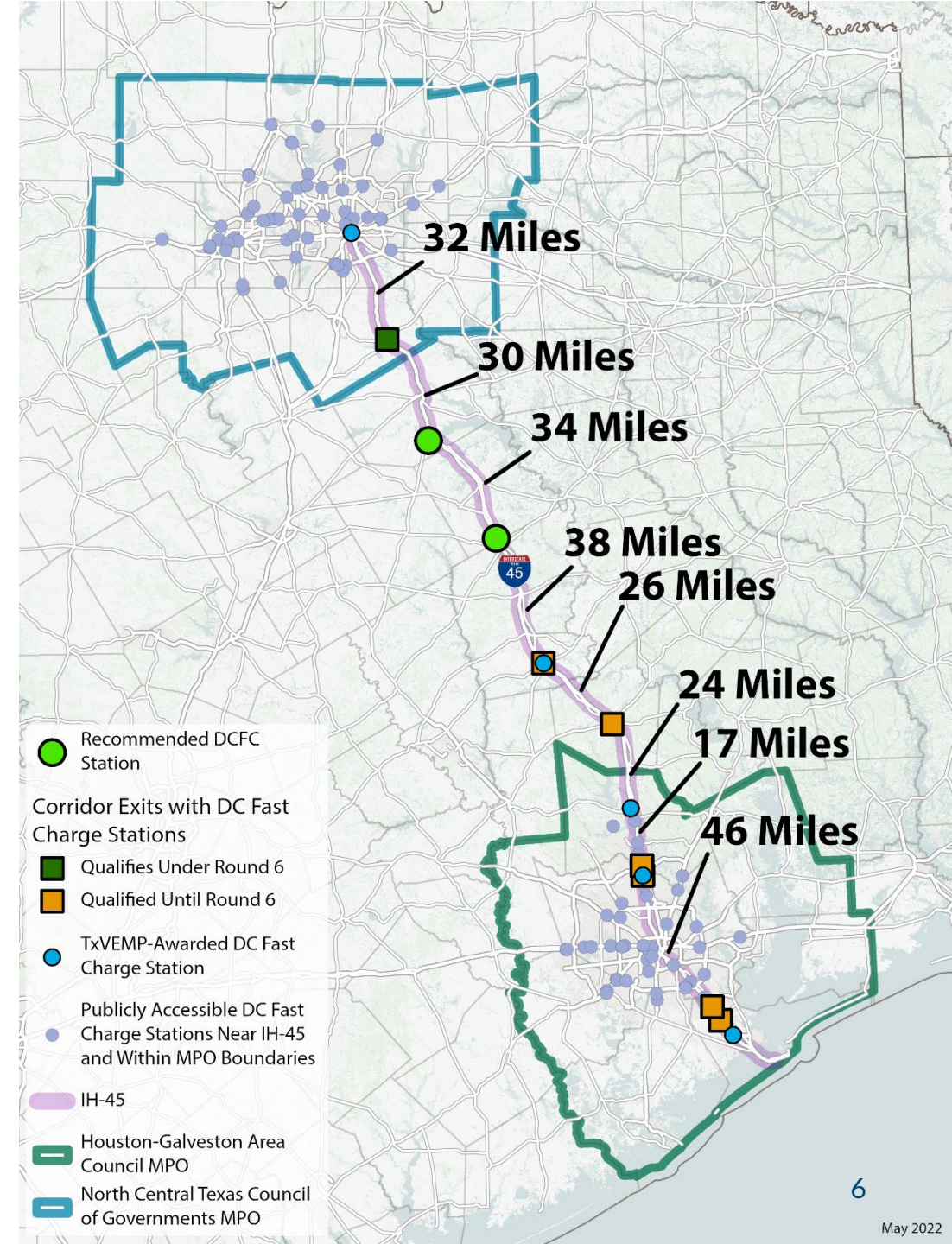
## Data-Driven Approach

1. Located in the "Pending" Gap
2. Intersects Another National Highway System Corridor
3. Number of Amenity Types (e.g., food, shopping, etc.)
4. No Direct-Connect Ramps

## Recommendations

2 Charging Stations: Buffalo and Corsicana

**Staff has Coordinated with TxDOT to Ensure Inclusion in Texas EV Charging Plan**



# Medium- and Heavy-Duty Truck Impact on Regional Air Quality

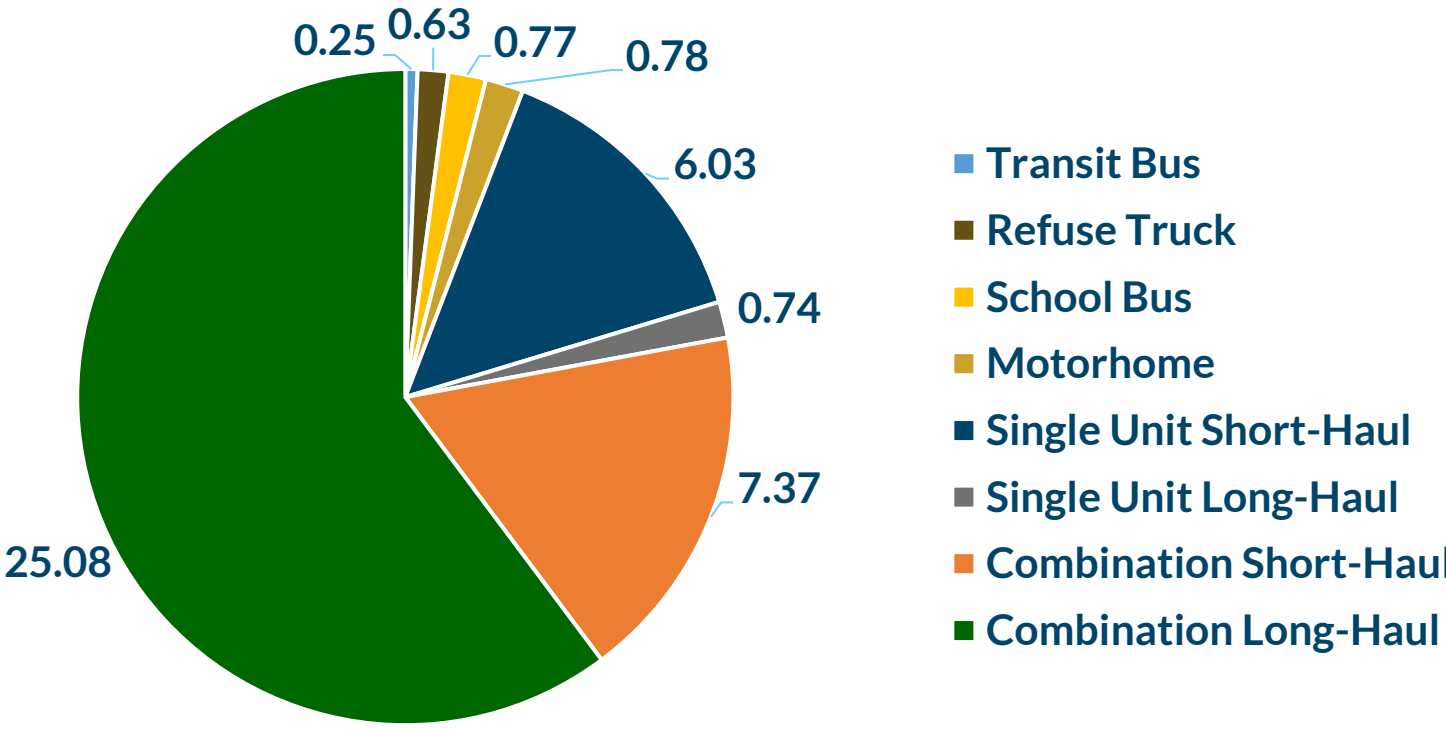
## Medium/Heavy Duty Vehicle Impacts:

- ~5 % of Miles Traveled
- ~40% of Nitrogen Oxides (NO<sub>x</sub>)

## Key Factors in Choosing ZEV Platform:

- Weight
- Refueling Time
- Range (Route Length)

### NO<sub>x</sub> Emissions in Tons per Day by Medium/Heavy-Duty Vehicle Type



# StreetLight Analysis

Used “Top Routes” Analysis to Visualize Truck Routes Traveled after Passing Through a Zone Placed on IH 45 or at a Freight-Oriented Development

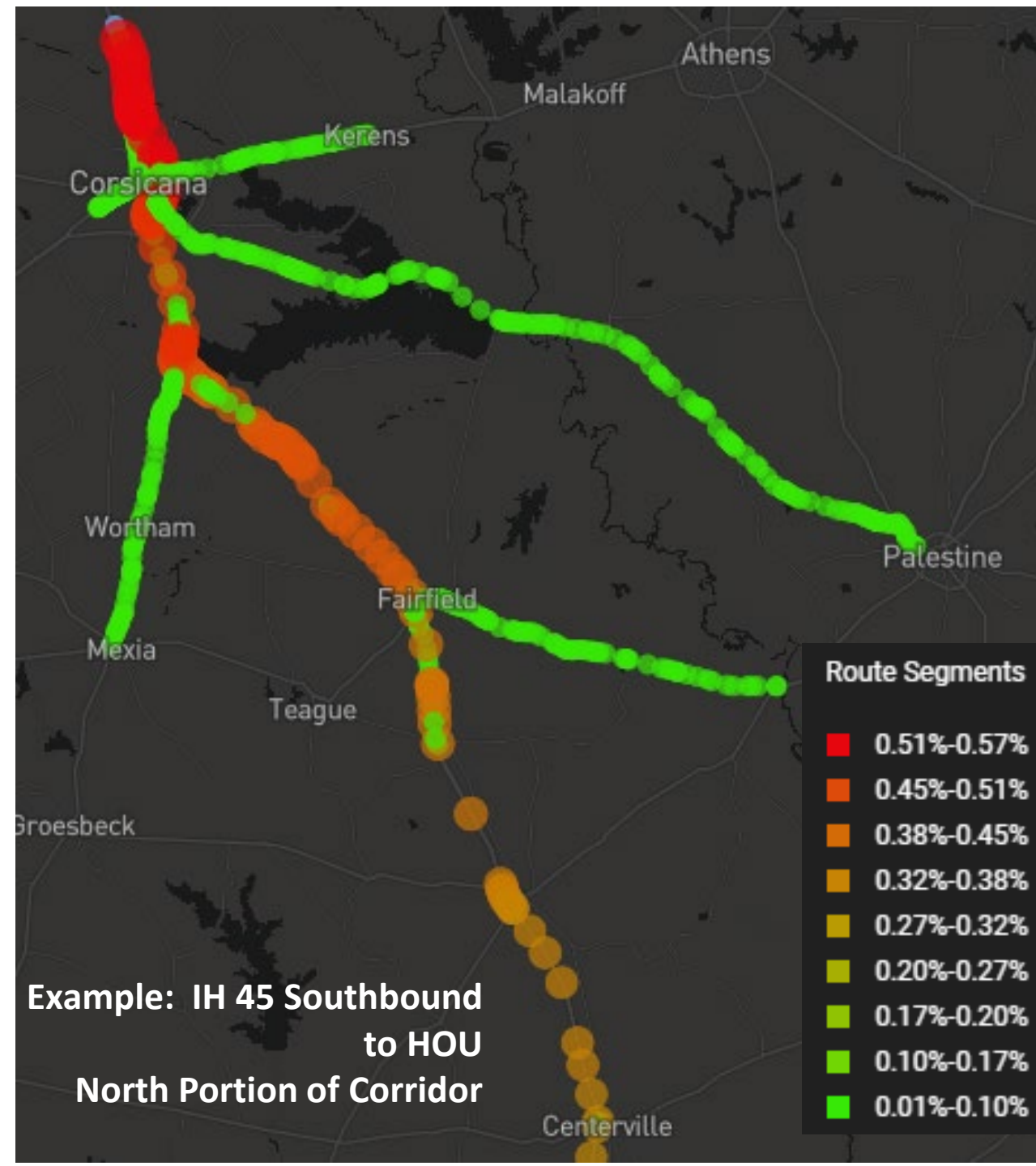
Confirms the Nature of Traffic Leaving Houston is Largely Destined for DFW, and Vice-Versa

Few Turnoff Points between Metros

Analysis Provided by  
Larry Meyer, Houston-  
Galveston Area Council



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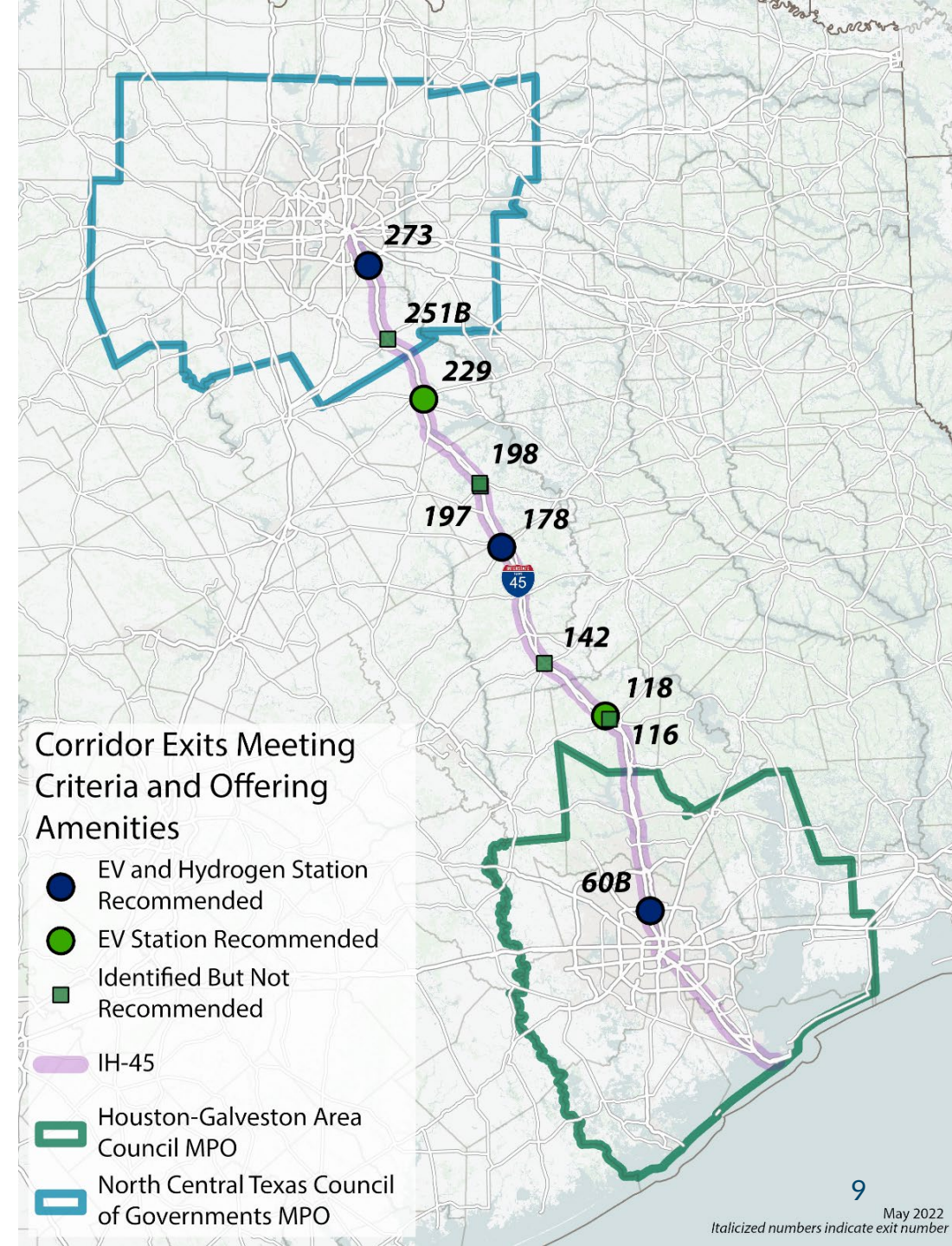
# Infrastructure for Heavy-Duty Vehicles

## Data-Driven Approach

1. Intersects a Freight System Corridor
2. No Direct-Connect Ramps
3. Cross Street Accessible from Both NB and SB Directions of Travel
4. Turning Point Indicated by StreetLight Data
5. Access to at Least 2 Types of Amenities - Truck Stops Key

## Recommendations:

- 5 EV Charging Sites: Houston, Huntsville, Buffalo, Corsicana, near UP Intermodal Facility
- 3 Hydrogen Fueling Sites: Houston, Buffalo, near UP Intermodal Facility



# Implementation Considerations

## Estimated Costs per Site

\$600,000 for Light-Duty Charging

\$6-\$18 Million for Heavy-Duty Charging

\$6-\$26 Million for Heavy-Duty Hydrogen

## Futureproofing & Resilience

Standardization

Co-Location of Fuels

Design to Accommodate Autonomous Vehicles

Development of Additional Corridors, Notably Texas Triangle



# Policies, Regulations, and Incentives

## **Federal Actions Providing Momentum for ZEV Projects**

### **State-Level Factors Mixed**

Favorable Economics

Lack of State-Level Policies and Complications of Deregulation

## **Dallas and Houston Climate Action Plans Provide Supportive Local Framework**

### **Expanding Availability of Incentives**

Inventory of Incentive Programs

Identification of Key Barriers and Potential Solutions

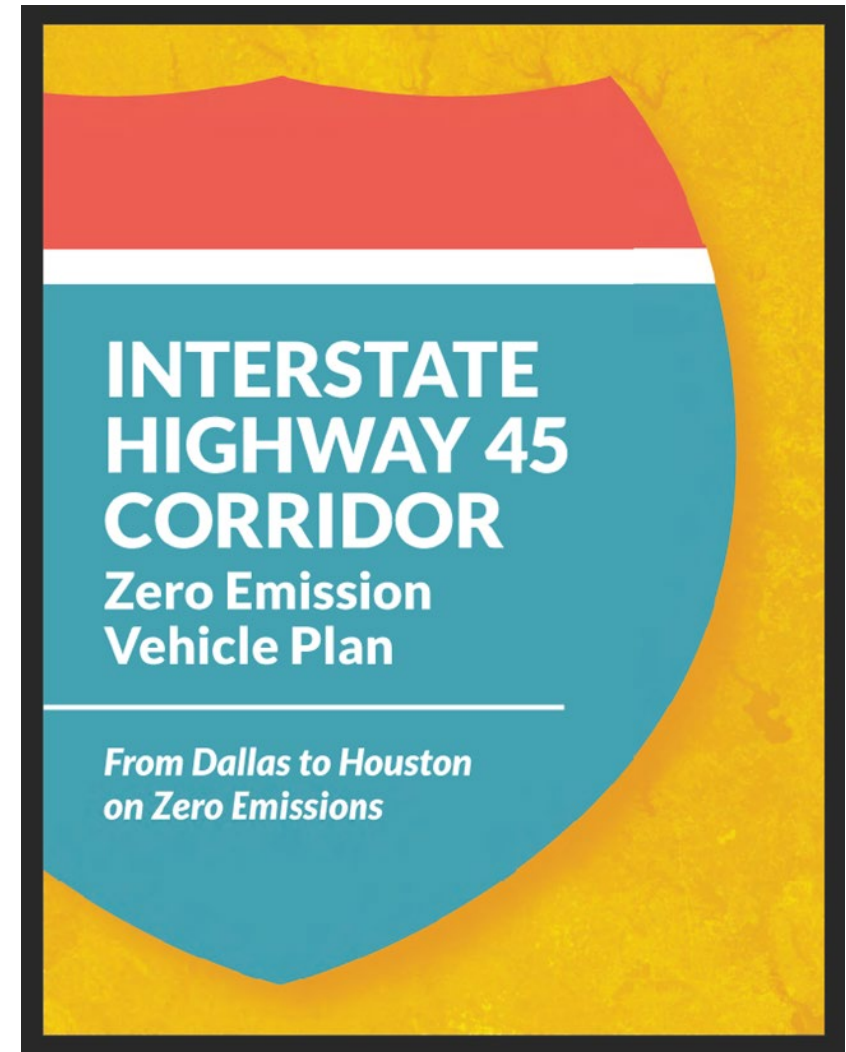




# Final Document

- Chapter 1 – Introduction
- Chapter 2 – The Importance of ZEV Projects Along the IH 45 Corridor
- Chapter 3 – Filling the Gaps: EV Charging for Light-Duty Passenger Vehicles
- Chapter 4 – Building a Corridor for Medium- and Heavy-Duty Freight Vehicles
- Chapter 5 – Implementation Resources
- Chapter 6 – Policy and Regulator Landscape
- Chapter 7 – Federal and State Incentives to Support Zero Emission Vehicle Deployments
- Chapter 8 - Accomplishments and Recommended Next Steps

[www.nctcog.org/IH45-ZEV](http://www.nctcog.org/IH45-ZEV)



# Next Steps

## **Complete Light-Duty Recommendations Through Texas EV Charging Plan**

(National EV Infrastructure Formula Program)

## **Leverage Stakeholder Network for Project Planning**

Additional Corridor Plans – Potential Through Department of Energy

Refueling/Recharging Site Development – Potential Through \$2.5 Billion Discretionary Grant Program for Charging and Fueling Infrastructure



# For More Information



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[www.nctcog.org/IH45-ZEV](http://www.nctcog.org/IH45-ZEV)

[www.driveelectricdfw.org](http://www.driveelectricdfw.org)

NCTCOG Summer 2023 Internship opportunities

